

Indian Explosives Act (IV of 1884)
Petroleum Act (XXX of 1934)

FORTIETH ANNUAL REPORT
OF THE
Chief Inspector of Explosives
in India

Being his Annual Report for the year ending 31st March 1939



(A.C.)

PUBLISHED BY MANAGER OF PUBLICATIONS, DELHI
MANAGER, GOVERNMENT OF INDIA PRESS, CALCUTTA
1939

F5594.22N

G9

80854

Price Re. 1 or 1s. 6d.

Indian Explosives Act (IV of 1884)

Petroleum Act (XXX of 1934)

REPORT

OF THE

**Chief Inspector of Explosives
in India**

Being his Annual Report for the year ending 31st March 1939



**PUBLISHED BY MANAGER OF PUBLICATIONS, DELHI
PRINTED BY MANAGER, GOVERNMENT OF INDIA PRESS, CALCUTTA
1939**

List of Agents in India from whom Government of India Publications are available.

(a) PROVINCIAL GOVERNMENT BOOK DEPOSITS.

ASSAM :—Superintendent, Assam Secretariat Press, Shillong.
BIHAR :—Superintendent, Government Printing, P. O. Gulzarbagh, Patna.
BOMBAY :—Superintendent, Government Printing and Stationery, Queen's Road, Bombay.
CENTRAL PROVINCES :—Superintendent, Government Printing, Central Provinces, Nagpur.
MADRAS :—Superintendent, Government Press, Mount Road, Madras.
NORTH-WEST FRONTIER PROVINCE :—Manager, Government Printing and Stationery, Peshawar.
ORISSA :—Press Officer, Secretariat, Cuttack.
PUNJAB :—Superintendent, Government Printing, Punjab, Lahore.
SIIND :—Manager, Sind Government Book Depot and Record Office, Karachi (Sadar).
UNITED PROVINCES :—Superintendent, Printing and Stationery, U. P., Allahabad.

(b) PRIVATE BOOKSELLERS.

Advanl & Co., The Mall, Cawnpore.
 Acro Stores, Karachi.*
 Army Musketry Stores, Moga (Punjab).†
 Bantliya & Co., Ltd., Station Road, Ajmer.
 Bengal Flying Club, Dum Dum Cantt.*
 Bhawnani & Sons, New Delhi.
 Bombay Book Depot, Charni Road, Girgaon, Bombay.
 Book Company, Calcutta.
 Booklover's Resort, Talukad, Trivandrum, South India.
 British Book Depot, Lucknow.
 British Book Depot, Rissalpur.
 British Stationery Mart, Booksellers, Peshawar Cantt.
 Buckingham & Co., Book-sellers and Stationers, Greenwood Street, Sialkot City.
 Burma Book Club, Ltd., Rangoon.
 Cambridge Book Co., Booksellers, New Dak Bungalow Road, Patna.
 Chandrakant Chimanlal Vora, Ahmedabad.
 Chatterjee & Co., 3, Bacharam Chatterjee Lane, Calcutta.
 Chincy & Sons, Booksellers, etc., Dhautoli, Nagpur, C. P.
 Chukerverty, Chatterjee & Co., Ltd., 13, College Square, Calcutta.
 Das Gupta & Co., 51/3, College Street, Calcutta.
 Dastano Brothers, Home Service, 450, Raviwar Peth, Poona 2.
 Delhi and U. P. Flying Club, Ltd., Delhi.*
 Deshmukh Book Depot, Station Road, Sholapur.
 English Book Depot, Ferozepore.
 English Bookstall, Karachi.
 English Book Depot, Taj Road, Agra.
 English Book Store, Abbottabad, N.-W. F. P.
 Faqir Chand Marwah, Peshawar Cantonment.
 Higginbotham, Madras.
 Hindu Library, 137-F, Balaram De Street, Calcutta.
 H. L. College of Commerce Co-operative Stores, Ltd., Ahmedabad.
 Hyderabad Book Depot, Chaderghat, Hyderabad (Deccan).
 Ideal Book Depot, Rajpur Road, Dehra Dun and Dumbay Bazar, Meerut.
 Imperial Book Depot and Press, near Jama Masjid (Machhi-i-walail), Delhi.
 Imperial Publishing Coy., Lahore.
 Indian Army Book Depot, Dayalbagh, Agra.
 Indian Army Book Depot, Daryaganj, Delhi.
 Indian School Supply Depot, Central Avenue, South, P. O. Dharamtala, Calcutta.
 International Book Service, Poona 4.
 Jaina & Bros., Mori Gate, Delhi and Connaught Place, New Delhi, Messrs. J. M.
 Joshi, News Agent, Devgad Baria, old Piprod, Bombay, Mr. V. G.
 Kannala Book Depot, 15, College Square, Calcutta.
 Kannal & Co., 0, Commercial Buildings, The Mall, Lahore, Messrs. N. C.
 Karnataka Sahitya Mandir, Dharwar (S. India).
 Kale & Co., 65, Britto Road, Karachi (Saddar).
 Kitabistan, 17-A, City Road, Allahabad.
 Krishnaswami & Co., Teppakulam P. O., Trichinopoly Fort, Messrs. S.
 Lahiri & Co., Ltd., Calcutta, Messrs. S. K.
 London Book Co. (India), Arbab Road, Peshawar, Murree, Nowshera, Rawalpindi.
 Lyall Book Depot, Lyallpore.
 Mahotra & Co., Post Box No. 64, Lahore, Messrs. U. P.
 Mathur & Co., Messrs. B. S., Chatur-Vilas, Patna, Civil Lines, Jodhpur (Rajputana).
 Minerva Book Shop, Anarkali Street, Lahore.
 Modern Book Depot, Bazar Road, Sialkot Cantt.
 Mohanlal Doreabhai Shah, Rajkot.
 Mohan News Agency, Kotah (Rajputana).
 National Welfare Publicity Ltd., Mangalore.
 New Book Co., "Kitab Mahal", 102, Hornby Road, Bombay.
 Newman & Co., Ltd., Calcutta, Messrs. W.
 Oxford Book and Stationery Company, Delhi, Lahore, Simla, Meerut and Calcutta.
 Parikh & Co., Baroda, Messrs. D.
 Pioneer Book Supply Co., 20, Shih Narayan Das Lane, Calcutta and 21B, Cloth Market, Delhi.
 Popular Book Depot, Grant Road, Bombay.
 Punjab Religious Book Society, Lahore.
 Punjab Sanskrit Book Depot, Lahore.
 Raghunath Prasad & Sons, Patna City.
 Rajna Krishna & Sons, Booksellers, Anarkali, Lahore.
 Ram Krishna Bros., Opposite Bhairambag, Poona City.
 Ramesh Book Depot and Stationery Mart, Kashmir Gate, Delhi.
 Ray & Sons, 43, K. & L. Edwardes Road, Rawalpindi, Murree and Peshawar, Messrs. J.
 Reliance Stores, Booksellers, Princes Street, Karachi.
 Rny Chowdhury & Co., 72, Harrison Road, Calcutta, Messrs. N. M.
 Saraswati Book Depot, 15, Lady Hardinge Road, New Delhi.
 Sarcar & Sons, 15, College Square, Calcutta, Messrs. M. C.
 Sarada Mandir, Ltd., Nai Sarak, Delhi.
 Standard Book Depot, Cawnpore.
 Standard Book Depot, Lahore, Delhi and Simla.
 Standard Bookstall, Karachi.
 Standard Bookstall, Quetta.
 Standard Law Book Society, 70/1, Harrison Road, Calcutta.
 Subhan, Book-Seller and Publisher, Illaspur, C. P., Mr. M. A.
 Swaminatha Sivam & Co., Pandukotal, Messrs. P. N.
 Tanawada & Sons, Booksellers, Sangli.
 Tara & Sons, Razmak (India), Messrs. B. S.
 Taraporevala Sons & Co., Bombay, Messrs. D. B.
 Thacker & Co., Ltd., Bombay.
 Thacker, Spink & Co. (1633), Ltd., Calcutta.
 Tripathi & Co., Book-Sellers, Princess Street, Khabadeli Road, Bombay, Messrs. N. M.
 Uberoy, J. C., Journalist, Printer and Publisher, Jayco House, Alexandra Road, Amhala.
 University Book Agency, Kacheri Road, Lahore.
 Upper India Publishing House, Ltd., Literature Palace, Amnuddaula Park, Lucknow.
 Varadachary & Co., Madras, Messrs. P.
 Venkatasubban, A., Law Bookseller, Vellore.
 Wheeler & Co., Allahabad, Calcutta and Bombay, Messrs. A. H.
 Young Man & Co. (Regd.), Egerton Road, Delhi.

*Agents for publications on Aviation only,
 †Agent for Army Publications only.

**Fortieth Annual Report of the Chief Inspector of
Explosives in India.**

No. G.-28 (1)-18.

FROM

LT.-COL. G. W. BICKLEY, O.B.E., R.E. (I.A.) (Retd.),
Offg. Chief Inspector of Explosives in India,

TO

THE SECRETARY TO THE GOVERNMENT OF INDIA,
DEPARTMENT OF LABOUR,
SIMLA.

Calcutta, the 14th September 1939.

Sir,

I have the honour to submit herewith a report of the work of the Department of Explosives during the year ending 31st March 1939.

2. *Personnel.*—In their letter No. M.-505, dated the 18th February 1939, the Government of India were pleased to sanction the conversion of the two temporary posts of Assistant Inspector of Explosives into permanent posts with effect from the 1st March 1939. Messrs. S. N. Lahiri, M.Sc., and N. S. Mankiker, B.Sc., B.E., temporary Assistant Inspectors of Explosives were appointed as Assistant Inspectors of Explosives with effect from the 1st March 1939.

Rai Sahib Beli Ram, Office Superintendent, was granted leave on average pay for two months and ten days with effect from the 2nd May 1938. On return from leave he assumed charge of his duties from the forenoon of the 12th July 1938.

Explosives.

3. *Number of Magazines.*—During the year 1938, 168 licences were granted in British India under Rule 46 and items 10 and 11 of Schedule, II to the Indian Explosives Rules, 1914. The number of magazines licensed was 200 or nine more than in 1937 and is still in excess of the number of licences because in a number of cases firms have two or more magazines in one place under one licence. This practice of granting one licence for more than one magazine seems somewhat irregular and each magazine is now being separately licensed. A statement showing the number and location of the magazines and also the number of licences granted in British India during the year 1938 is given in Appendix A and a statement showing the number of magazines and licences granted during the past 10 years is shown in Appendix B.

4. *Inspection of explosives magazines during the year.*—During the year 214 inspections of magazines were made, a number of magazines being inspected two or three times. Those magazines are inspected most frequently which are situated in the neighbourhood of towns or in populous localities, or which contain large quantities of explosives, or any explosive which on account of its greater susceptibility to decomposition and possible ignition, it is considered advisable to examine and test more frequently than other explosives.

5. *Condition of Magazines.*—The magazines generally are in good order and as usual magazine owners have been found most willing to carry out recommendations even when involving considerable expense, and thanks are due to them for making the duties of this Department easy in this respect. The distances round some of the older magazines are still being seriously encroached upon, particularly in the case of those near the larger cities, and it will unquestionably be necessary to find new sites for them before very long.

6. *Condition of explosives in magazines.*—The physical condition of all the explosives in the different magazines during the year was found to be good with the following exceptions, which were found to have become defective and were destroyed :—

- (a) 25 Cartridges of Dynamite from the explosives magazine of the Ballarpur Collieries Company at Ballarpur.
- (b) 87 Coils of Red-safety fuse from the magazine of the North Western Railway at Guler.
- (c) 1 case containing 50 lbs. of Polar Ammon Gelignite No. 2 ($1\frac{1}{8}$ ") from the magazine of Messrs. Best and Company Limited at Kurukupet.
- (d) 38 Cartridges of Gelignite from the magazine of Messrs. Shaw Wallace & Company, Agents, Punch Valley Coal Company Limited at Barkhui.
- (e) 75 Cartridges of Gelignite from the explosives magazine of Messrs. C. P. Syndicate Limited, Junardeo at No. 2 Colliery.

- (f) 169 Cartridges of N. S. Gelignite and 23 Coils of Safety Fuse from the explosives magazine of the Engineer and Loco. Superintendent, Matheran Hill Light Railway, Neral at Junnápatti.
- (g) 19½ lbs. of Gelignite and 100 Detonators from the magazine of the Bombay Baroda and Central India Railway Company at Jekot.
- (h) 8 cases of Tartaries from the explosives magazine of Messrs. Abdul Husien Esufbhoy Bandukwala & Company at Chembur.
- (i) 1 case containing about 2,000 Crackers from the explosives magazine of Messrs. S. M. H. Ibrahim & Company at Basin Bridge.
- (j) 2 Cartridges of Dynamite, 7 lbs. of N. S. Gelignite and 25 Safety Cartridges, 12 Bore, from the explosives magazine of Mr. Ismail Muse Khan at Talapara.
- (k) 5 lbs. of Fireworks, Class VII, Division II, from the premises of Messrs. S. M. H. Ibrahim & Company, Madras.
- (l) 35 lbs. of Gelignite from the explosives magazine of the Indian Iron & Steel Company, Ltd., at Gua (Jhilling Buru Section).
- (m) 150½ lbs. of Dynamite, 40% N. G. and 150 lbs. of Gelignite from the magazine of the Executive Engineer, Nira Canals Division, at Malsiras.
- (n) 600 lbs. of Chinese Crackers in 12 cases from the explosives magazine of Mr. N. Aruna Chalam Pillai at Kumbakonam.
- (o) 18 Electric Detonators from the explosives magazine of the Assam Railways & Trading Co., Ltd., at Margherita, stored on behalf of the Assam Oil Company, Limited.
- (p) 10,081 Detonators, 1,737 Electric Detonators and 249 1/12 Coils of Safety Fuse from the explosives magazine of the General Manager, H. E. H. the Nizam's State Railway at Dornakal.
- (q) 56 lbs. of Blasting Gelatine, 114 lbs. of Gelignite, 471 67/100 lbs. of Dynamite and 270 lbs. of Gunpowder from the explosives magazine of the General Manager, H. E. H. the Nizam's State Railway at Bonakalu.

7. *Prosecutions under the Indian Explosives Act.*—During the year under report, 4 persons were prosecuted under Section 5 (3) (c) of the Indian Explosives Act and Rule 138 read with section 5 of the said Act for manufacturing, possessing and selling explosives without licences. Two of them were sentenced to pay a fine of Rs. 25 and Rs. 15 respectively and the other two Rs. 50 each.

The proprietor of a firm in Madras was also convicted and sentenced to pay a fine of Rs. 100 or in default to undergo simple imprisonment for two months for storing in his shop manufactured fireworks in excess of the licensed quantity.

8. *Import of explosives.*—Two thousand six hundred and ninety-nine tons of explosives were imported into British India during the year 1938, the value being Rs. 29,67,247. Full details showing the different kinds of explosives imported and the value of each are given in Appendix C. A comparative

statement showing the quantity of explosives imported during the last 10 years is given in Appendix D.

9. *Authorised explosives.*—A list of explosives authorised for importation into British India was published in the *Gazette of India* for information and is given in Appendix E. The list has been considerably amended more particularly in respect of the fireworks. Manufactured fireworks as a class has been withdrawn and replaced by a list of approved varieties.

10. *Manufacture of explosives.*—Out of the five licences granted by the Central Government for the manufacture of gunpowder, three, viz., one in the District of Chanda and two in the District of Chhindwara in the Central Provinces were renewed for the year 1939. The remaining two licences, viz., one in the District of Munbhum in Bihar and the other in the District of Jhelum in the Punjab have not yet been renewed for the year.

The licence granted by the Central Government to the Manager, Kargali Colliery for the manufacture of liquid oxygen explosives was renewed for the year 1939.

The licence granted by the Central Government to the Indian Oxygen and Acetylene Company Limited, Calcutta for the manufacture of liquid oxygen explosives has also been renewed for the year 1939.

The licence granted by the Central Government for the manufacture of Electric Sparklers and Serpent Powder in the Bombay Suburban District was also renewed for the year 1939.

Petroleum.

11. *Number of petroleum premises.*—During the year under report 5,278 licences for the storage of dangerous and non-dangerous petroleum and carbide of calcium were granted by this Department. A list of these premises corrected upto 31st December 1938 and showing the Districts in which they are located is given in Appendix F.

12. *Prosecution under the Petroleum Act.*—The Managing Director of a firm in Calcutta, was sentenced to pay a fine of Rs. 50 or in default to undergo simple imprisonment for 15 days for erecting an unauthorised shed in his Petrol filling Station at No. 4/2, Russa Road, Calcutta.

13. *Inspection of petroleum premises during the year.*—In all 5,674 inspections of petroleum premises were made. This number includes a large number of premises licensed by the District Authorities.

14. *Condition of installations.*—The installations as a whole are usually in good order and well-looked after but some firms still fail to realise the importance of putting in responsible charge of such premises only persons of proved practical experience and technical knowledge. Many of the smaller installations still fall below the standard it is desired to maintain but with increased facility for inspection on the part of the Department their condition should be steadily improved.

15. *Small depots and storage sheds.*—The examination of these premises resulting from the introduction of the new Petroleum Rules disclosed that many of them were quite unsuitable for the purposes for which they had been licensed in the past. In the worst cases continued use of the storage sheds

would not be permitted but in other cases to avoid hardship to the owner, licences were renewed conditionally, time being allowed for new facilities to be provided.

Carbide of Calcium.

16. The distribution of the licences indicates that much unlicensed storage must be in existence and that licence holders are not yet aware of their responsibility, under rule 19 of the Carbide of Calcium Rules, 1937, not to deliver or despatch carbide to any one other than the holder of a storage licence. Many old premises were found to be quite unsuitable and unsafe but as in the case of smaller petroleum premises, wherever possible, arrangements were made to avoid inflicting unnecessary hardships on existing licensees.

Accidents.

17. *Number of accidents.*—A list of accidents that have occurred with explosives, inflammable substances, dangerous goods, etc., between the 1st January and 31st December 1938 is given, together with a short account of each, in Appendix G and a summary in Appendix H. A larger number of these distressing events are recorded this year than has been the case in the past and the spreading use in the manufacture of fireworks of dangerous mixtures containing chlorates has undoubtedly increased the number of accidents but the chief reason for the rise in the figures is an improvement in the reporting of these occurrences to the Department. It will be seen from a perusal of the details that practically all the accidents were caused by gross neglect of ordinary precautions. Eighty-three of such accidents resulting in 70 deaths and injuries to 99 persons were reported to this Department. Comparative statements given in Appendices I and J show the total number of accidents and the number of persons killed or injured by them during the last ten years. Many accidents that occur are still not reported to this Department unless, as a result of information from other sources, a reference has been made to the Local Authority concerned. The statistics given must therefore continue to understate the real number of accidents.

The accidents entered in Appendix G are those only which are non-political.

18. *Gunpowder, Class I.*—There were seventeen accidents from gunpowder during the year causing thirteen deaths and injuries to ten persons.

19. *Nitro-compounds, Class III.*—One accident from Nitro-compounds causing 2 deaths and injuries to one person was reported during the year.

20. *Chlorate-mixture, Class IV.*—No accident from explosives classed as Chlorate-mixtures was reported.

21. *Fulminates, Class V.*—No accident from the use of fulminates, as such, was reported. Firework accidents previously reported under this head are classified under Fireworks, Class VII.

22. *Ammunition, Class VI.*—One accident from ammunition was reported and was responsible for injuries to one person.

23. *Fireworks, Class VII.*—Reports were received in this Department of 49 accidents from Fireworks involving the death of 44 persons and injuries

to 76 others. The majority of these accidents were caused by the use of a prohibited sensitive mixture of potassium chlorate and sulphur or sulphuret and in many cases prosecutions are pending.

24. *Liquid oxygen explosives.*—No accident from liquid oxygen explosives was reported.

25. *Petroleum.*—There were eight accidents from petroleum reported during the year. They were responsible for eleven deaths and injuries to eight persons. It will be seen from a perusal of the accidents in Appendix G that carelessness is a prominent feature and that many of them are caused by naked lights being brought into close proximity to oil vapour.

26. *Chemicals.*—Four accidents from chemicals were reported to this Department, causing injuries to one person.

27. *Miscellaneous.*—Three miscellaneous accidents were reported and were responsible for injuries to 2 persons.

28. *Lamp oil accidents in Bombay.*—Besides the above accidents twenty-six deaths arising out of accidents from kerosene lamp oil in the city of Bombay were reported during the year. These accidents are not included in the comparative statements given in Appendices I and J as in the majority of these cases the injured persons met with their deaths by deliberately pouring kerosene oil over their persons.

General Remarks.

29. *Government Magazines in charge of Civil Officers.*—Only seven reports of the inspection of these magazines by Civil officers have been received in this Office. All magazines in charge of civil officers should be inspected at least once a year and the reports forwarded to Chief Inspector of Explosives for comment. Several instances have come to the notice of this Department in which want of expert knowledge might have caused disasters. High explosives in these magazines have frequently never been tested and it has always been recommended in dealing with these reports that samples of explosives should be sent for test at least once a year.

Eight Railway magazines were inspected by this Department during the year. Arrangements have, however, been made for this Department to make more frequent inspections of Railway magazines than has been the practice in the past.

30. *Packing of Detonators.*—The permission granted to the Agents of Messrs. Nobel's Explosives Co., Ltd., authorising the importation of detonators packed in cases with a clear space of not less than one inch, instead of not less than three inches (as required by the regulations for package of explosives given in Schedule IV to the Indian Explosives Rules, 1914) was further extended by one year from 6th June 1938.

31. *Small Gunpowder and Firework Factories.*—The conditions under which gunpowder and fireworks are manufactured and handled continue to give rise to anxiety. In many cases the most elementary precautions are completely ignored and the safety of the public and surrounding property given no consideration whatever. It must be admitted that these omissions are largely due to lack of technical knowledge and to failure to appreciate the dangers involved, but this does not justify the continued licensing of

premises which in any way fail to comply with the conditions laid down on the licence forms. No technical knowledge is required to ensure that the number of persons on the premises is limited, that the explosive is manufactured in a tent or lightly constructed building exclusively appropriated for the purpose and separated from any dwelling house, highway, street, public thoroughfare or public place by the necessary safety distances, that the licensed quantity is not exceeded and that explosives as manufactured are immediately removed to a safe place of storage and not allowed to accumulate in the place of manufacture. The maximum quantity of gunpowder or fireworks which may be possessed under the usual licence to manufacture is 200 lbs. (two hundred pounds) of fireworks contained a relatively small amount of explosive and it is on this fact that the elementary conditions attaching to the licences for these small factories are laid down. Unfortunately it is a very common practice for the licensed quantity to be grossly exceeded, with disastrous results when an accident does occur. Admittedly expert knowledge is necessary before any efficient control can be exercised over the explosive mixtures used in making up the actual fireworks but the licensing authorities can to a great extent reduce the distressing number of accidents which occur each year by insisting on the observance of safety distances and other elementary precautions and by enforcing the quantity limits prescribed by the licence.

Unfortunately there has again been a large number of serious accidents in these premises and in the handling of these two explosives. In the case of fireworks the reasons for the large number of explosions is most often the use of unsafe and unduly sensitive compositions but in too many cases the greater number of the casualties is due to a complete absence of any of the usual precautions necessary in handling explosive materials. It is only too frequently found that the premises for the manufacture and storage of these dangerous commodities are located in thickly populated areas; even in the midst of a bazar itself. In respect of the use of unduly dangerous compositions steps are already being taken to exercise stricter control over the materials involved and, in particular, chlorates have been brought within the scope of the Indian Arms Act. Very few ordinary fireworks require the use of chlorates in their preparation and, if the authorities issuing licences for the possession and use of chlorates under the new regulations, do not issue such licences for the manufacture of fireworks without in the first instance consulting this Department as to the suitability of the mixture proposed, by far the largest number of the accidents at present occurring will be automatically prevented. Most of the terrible casualties among the innocent members of the public could be avoided if the Licensing Authorities would remember that when fireworks are manufactured not more than fifty pounds, and when fireworks are not manufactured but only stored, not more than two hundred pounds, may be stored in any premises which are not exclusively used for the purposes and separated by at least fifty yards from any other building or public highway. Another point requiring immediate attention is the quantity of fireworks which can be possessed at any one time. It is only too evident that little attention is paid to this point and the manufacture, possession and storage of quantities grossly in excess of that which may legally be possessed is the rule rather than the exception. Even under temporary permits granted for the storage of a larger quantity of explosives than is allowed by the

licence the explosives must be stored in accordance with the regulations outlined above and quantities like a thousand pounds cannot, under any circumstance, be stored in any shop or dwelling but must, whether the licence is in Form A, B, C or D, be stored in a proper place separated by at least fifty yards from any building or public thoroughfare.

References are now being received in this office from the District Authorities in regard to the grant of licences for the storage of chlorates for use in the manufacture of fireworks.

32. Transport of explosives.—Directly resulting from the conditions prevalent in the small factories manufacturing gunpowder follows lax conditions in the transport of these materials, particularly by road. The carrying of gunpowder on buses and lorries carrying passengers at the same time is far too common to admit of any justification and local authorities should do everything in their power to put an immediate end to this terribly dangerous practice. Also it does not seem to be understood that explosives, even country gunpowder, may not be transported under any conditions unless they are properly packed in accordance with the regulations laid down in the Explosives Rules, 1914. The common habit of transporting gunpowder packed only in gunny bags—often through villages and along the public highways—should be immediately stopped.

33. Indian Explosives Rules, 1914, Petroleum and Carbide of Calcium Rules.—The amendments made to these rules during the year under report are given in Appendix K.

34. Decanting of petrol into smaller receptacles in premises licenced in Form I of the Petroleum Rules, 1937.—It has been brought to the notice of this Department that petrol was being supplied to holders of licences in form I of the Petroleum Rules, 1937, in contravention of rule 29 and condition 8 of the licence, in packages other than the standard 2-gallon petrol tins and that these large packages were being decanted into smaller receptacles by licence holders. The Oil Companies were therefore requested to advise their agents and installation and depôt managers that future cases of infringements of rule 29 and condition 8 of licence form I reported to this Department would involve recommendations for the immediate cancellation of the licence and might also include the cancellation of the licence of the premises from which the petroleum was improperly despatched to the Form I licensees.

35. Precautions against fire.—The Inspecting Officers of this Department at the time of their visit to the smaller licensed petroleum storage premises noticed that proper attention was not paid to the provision of sand buckets or other efficient means of extinguishing fires. In case where sand buckets were provided the receptacles were found to be too heavy to allow of easy handling in case of any emergency. The attention of the licensees of those premises was therefore drawn to rule 91 (4) of the Petroleum Rules, 1937, and they were asked to provide sand in or near the premises under their control in buckets or other receptacles of a size convenient to allow of easy handling in case of any emergency.

36. Transport of petroleum other than heavy petroleum by motor lorries.—As there appeared to be a great deal of misunderstanding in respect of the application of rules 70 and 79 of the Petroleum Rules, 1937 to lorries used in the transport by road of petroleum other than heavy petroleum, the oil

Companies were told that from 1st January 1939 all vehicles, including trailers, used in the transport by road of petroleum other than heavy petroleum and registered and licensed for the first time for use on the road on or after that date must be fitted with electrical equipment heavily insulated and independent of the chassis, i.e., the battery, the dynamo, the self-starter, the distributor, the petrol pump, the oil and petrol gauge and all other fittings, lamps and appliances must be so insulated that there is no electrical connection between them and the chassis of the vehicle. It was further pointed out that every mechanically driven vehicle used for the transport by road of dangerous petroleum in bulk or non-bulk and non-dangerous petroleum not being heavy petroleum in bulk must comply with rule 79 and be fitted, among other requirements, with a fire resisting shield which must completely screen the load from the cab i.e., it should be extended above the load and be wider than the body of the vehicle wherein the petroleum was carried. The oil companies were further requested that where outside carriers for the transport of petroleum were employed they should bring these requirements to the notice of such carriers and advise them that any petroleum transported contrary to these requirements was liable under Section 26 of the Petroleum Act to be seized and detained wherever it might be found.

37. *Enquiries.*—A very large number of enquiries of a varied nature were received during the year from District Officials, private individuals, firms, Port Authorities and Railways. These were all dealt with.

38. *Red Pamphlet.*—This Department was consulted by the Indian Railway Conference Association in connection with numerous amendments and additions to the rules contained in Red Pamphlet No. 13 (Rules and Rates for the conveyance by Rail of Explosives and other dangerous Goods).

39. *Number of Inspections made.*—The number of inspections made by this Department during the year was 5,888 and was greater than last year. The following details of tours made by the Inspectors and the Assistant Inspectors of Explosives during the 12 months, 1st April 1938 to 31st March 1939, give some idea of the work and ground covered :—

—	Days on Tour.	Inspections made.	Distance travelled.
Inspector of Explosives—			
North Circle . .	200	970	22,850
South Circle . .	131	785	14,830
East Circle . .	108	374*	10,379
West Circle . .	130	917	15,888
Assistant Inspector of Explosives—			
North Circle . .	155	609	18,891
South Circle . .	145	832	12,394
East Circle . .	82	261*	7,632
West Circle . .	144	943	18,603

*NOTE.—The touring of these two officers was seriously interfered with as they were kept at Headquarters to assist in disposing of the great rush of work in the office.

The Chief Inspector of Explosives was on tour for 100 days, travelling 17,200 miles, went on inspection duty to the Punjab Oilfields, Delhi and the North-West Frontier Province and visited the ports of Calcutta, Bombay, Karachi, Madras, and Cochin.

I have the honour to be,

Sir,

Your most obedient servant,

G. W. BICKLEY,

Lt.-Col.,

Offg. Chief Inspector of Explosives in India.

APPENDIX A.

(See paragraph 3 of the Report).

List of Magazines and Licences granted under Rule 46 and items 10 and 11 of Schedule II of the Indian Explosives Rules, 1914, for the year 1938.

Presidency or Province.	District.	MAGAZINES.			LICENCES.		
		Under renewed licence.	Under new licence.	TOTAL.	Renewed	New.	TOTAL.
Assam	Cachar	1	...	1	1	...	1
	Lakhimpur	6	2	8	6	2	8
	Naga Hills	1	...	1	1	...	1
	Sibsagar	—	2	2	—	2	2
	TOTAL	8	4	12	8	4	12
Baluchistan	Zhob	—	1	1	—	1	1
	TOTAL	—	1	1	—	1	1
Bengal	Burdwan	9	...	9	6	...	6
	Hooghly	4	...	4	1	...	1
	Howrah	1	...	1	1	...	1
	24-Parganas	2	...	2	1	...	1
	TOTAL	16	...	16	9	...	9
Bihar	Gaya	3	1	4	3	1	4
	Hazaribagh	22	...	22	18	...	18
	Manbhum	23	...	23	21	...	21
	Ranchi	1	...	1	1	...	1
	Shahabad	1	...	1	1	...	1
	Singhbhum	12	...	12	10	...	10
	TOTAL	62	1	63	54	1	55

APPENDIX A—contd.

List of Magazines and Licenses granted under Rule 46 and items 10 and 11 of Schedule II of the Indian Explosives Rules, 1914, for the year 1938
—contd.

Presidency or Province.	District.	MAGAZINES.			LICENSES.		
		Under renewed license.	Under new license.	TOTAL.	Renewed.	New.	TOTAL.
Bombay . . .	Ahmedabad . .	3	1	4	3	1	4
	Bombay . . .	9	...	9	5	...	5
	Bombay Suburban.	6	...	6	6	...	6
	Broach and Panch Mahals.	4	...	4	4	...	4
	Kolaba . . .	1	...	1	1	...	1
	Surat . . .	2	...	2	2	...	2
	Thana . . .	1	...	1	1	...	1
	TOTAL . . .	26	1	27	22	1	23
Central Provinces . .	Baleghat . . .	2	...	2	2	...	2
	Bhandara . . .	2	...	2	2	...	2
	Chanda . . .	5	...	5	5	...	5
	Chhindwara . .	10	4	14	10	4	14
	Jubbulpur . . .	1	...	1	1	...	1
	Nagpur . . .	5	...	5	5	...	5
	Raipur . . .	3	1	4	3	1	4
	TOTAL . . .	28	5	33	28	5	33

APPENDIX A—contd.

List of Magazines and Licenses granted under Rule 46, and items 10 and 11 of Schedule II of the Indian Explosives Rules, 1914, for the year 1938—contd.

Presidency or Province.	District.	MAGAZINES.			LICENSES.		
		Under renewed license.	Under new license.	TOTAL.	Renewed.	New.	TOTAL.
Madras	Chingleput	1	...	1	1	...	1
	Chittoor	1	...	1	1	...	1
	Coinbatore	1	...	1	1	...	1
	Guntur	1	...	1	1	...	1
	Madras	14	...	14	7	...	7
	Madura	3	...	3	3	...	3
	Nellore	2	...	2	1	...	1
	South Arcot	2	...	2	2	...	2
	Tanjore	3	...	3	3	...	3
	Tinnevely	2	...	2	2	...	2
	Trichinopoly	2	...	2	2	...	2
	Vizagapatam	2	...	2	1	...	1
	TOTAL	34	...	34	25	...	25
Orissa	Sambalpur	1	...	1	1	...	1
	TOTAL	1	...	1	1	...	1
Punjab	Attock	4	...	4	2	...	2
	Jhelum	2	...	2	2	...	2
	TOTAL	6	...	6	4	...	4
Sind	Karachi	5	...	5	3	...	3
	Sukkur	1	...	1	1	...	1
	TOTAL	6	...	6	4	...	4
United Provinces	Shahjahanpur	1	...	1	1	...	1
	TOTAL	1	...	1	1	...	1

SUMMARY.

Presidency or Provinces.	MAGAZINES.			LICENSES.		
	Under renewed license.	Under new license.	TOTAL.	Renewed.	New.	TOTAL.
Assam . . .	8	4	12	8	4	12
Baluchistan . .	—	1	1	—	1	1
Bengal . . .	16	...	16	9	...	9
Bihar . . .	62	1	63	54	1	55
Bombay . . .	26	1	27	22	1	23
Central Provinces .	28	5	33	28	5	33
Madras . . .	34	...	34	25	...	25
Orissa . . .	1	...	1	1	...	1
Punjab . . .	6	...	6	4	...	4
Sind . . .	6	...	6	4	...	4
United Provinces .	1	...	1	1	...	1
TOTAL .	188	12	200	156	12	168

APPENDIX B.

(See paragraph 3 of the Report.)

Summary of Magazines and Licenses granted under Rule 46 and items 10 and 11 of Schedule II for the ten years ending 1938.

YEAR.	MAGAZINES.			LICENSES.		
	Under renewed license.	Under new license.	TOTAL.	Renewed.	New.	TOTAL.
1929 . . .	264	14	278	221	14	235
1930 . . .	268	8	276	226	8	234
1931 . . .	267	9	276	223	9	232
1932 . . .	251	7	258	210	7	217
1933 . . .	237	8	245	198	8	206
1934 . . .	238	5	243	199	5	204
1935 . . .	238	9	247	199	9	208
1936 . . .	231	5	236	192	5	197
1937 . . .	186	5	191	156	5	161
1938 . . .	188	12	200	156	12	168

APPENDIX C.

(See paragraph 8 of the Report.)

Statement showing the imports of explosives by sea into British India from other countries in the year 1938.

Explosives.	Bengal.	Bombay.	Sind.	Madras.	TOTAL.
<i>Quantity.</i>					
Gunpowder, black lbs.	35,400	40,600	...	10,570	95,570
Dynamite . . . . . "	...	...	...	...	...
Blasting gelatine "	7,200	20,500	...	444,700	472,400
Gelignite or gelatine dynamite "	785,000	85,750	...	154,500	1,025,250
Other nitro-compound explosives "	588,140	...	...	300,550	948,690
Fireworks "	208,604	2,220,831	57,031	300,027	2,855,493
Total quantity of all explosives other than Detonators "	1,624,344	2,385,081	57,031	1,330,347	5,307,403
Detonators No.	4,060,000	466,000	1,500	4,320,700	8,857,200
<i>Value in rupees.</i>					
Gunpowder, black	30,271	24,588	...	4,190	50,058
Dynamite . . . . .	...	...	...	...	...
Blasting gelatine	6,136	15,427	...	352,411	373,074
Gelignite or gelatine dynamite	549,030	61,895	...	114,006	725,531
Other nitro-compound explosives	320,109	...	...	269,062	598,171
Detonators	166,101	10,636	205	66,099	252,131
Fireworks	64,954	750,300	35,202	107,026	958,382
TOTAL	1,145,601	871,846	35,407	614,303	2,667,247

APPENDIX D.

(See paragraph 8 of the Report.)

Comparative statement showing the imports of explosives by sea into British India from other countries for the ten years ending 1938.

Explosives.	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938
Gunpowder, black . . . c. lbs.	111,080	127,876	71,750	62,951	97,130	78,785	125,335	59,438	57,775	95,570
Powder, smokeless . . . "	15,950	14,888	16,355	5,645	6,060	7,645	9,480	18,800	17,515	...
Dynamite "	495,750	386,050	225,300	67,500	202,900	198,894	296,525	35,250	...	...
Blasting gelatine "	492,800	245,500	396,850	536,599	518,450	523,400	630,500	536,400	497,200	472,400
Gelignite or gelatine dynamite . . "	1,032,000	920,050	1,088,706	761,500	710,350	1,202,850	1,301,700	1,203,150	1,222,850	1,025,250
Other nitro-compound explosives . . "	221,500	203,000	142,400	131,050	60,000	78,550	124,000	85,420	725,773	948,680
Fireworks "	4,940,002	2,244,021	1,203,083	1,881,039	2,005,474	2,625,439	3,958,435	2,664,032	2,073,202	2,865,493
Total quantity of all explosives other than Detonators.	7,380,373	4,141,984	3,145,144	3,446,185	4,200,364	4,715,563	5,445,975	4,632,460	4,594,315	5,307,403
Detonators No.	8,022,326	6,446,558	5,395,946	4,393,994	3,298,150	6,000,500	6,601,187	5,213,120	7,527,100	8,857,200

80854

APPENDIX E.

(See paragraph 9 of the Report.)

DEPARTMENT OF EXPLOSIVES.

NOTIFICATION.

Calcutta, the 23rd July 1938.

No. E. 11 (1).—The following list of “ Authorised Explosives ” which will come into force on the twenty-first day of January 1939 and be in substitution for all such lists of an earlier date is published for general information with reference to :—

Rule 4 (3) of Notification No. 4013—33, dated the 6th June 1914, of the Government of India, Department of Commerce and Industry.

Rule 4 (3) of Notification No. 1183, dated the 11th November 1914, of the Chief Commissioner, Central Provinces, applicable to Berar.

Rule 4 (3) of Notification No. 14, dated the 23rd April 1915, of the Resident in Mysore, applicable to the Civil and Military Station of Bangalore and on the Railways in Mysore under British jurisdiction.

Rule 4 (3) of Notification No. 67-J, dated the 28th August 1914,	} of the Resident at Hyderabad applicable to the Cantonments of Secunderabad and Aurangabad, the Hyderabad Residency Bazars and the Railway lands in the Hyderabad State.
Rule 4 (3) of Notification No. 34-J, dated the 20th April 1915,	

Rule 3 (3) of Notification No. 5313, dated the 29th October 1918, of the Agent to the Governor General in Rajpootana.

Rule 3 (3) of Notification No. 1812-B, dated the 10th November 1919, of the Agent to Governor General in Central India, applicable to Railway lands in Central India, specified in the Notification of the Government of India in the Foreign Department, No. 261-I. B., dated 10th February 1913.

LIST OF AUTHORISED EXPLOSIVES.

The following explosives are authorised for importation into British India

for general sale with effect from 21st January 1939 until further notice :—

CLASS 1.—GUNPOWDER.

The term “gunpowder” means gunpowder ordinarily so-called.

Gunpowder.

CLASS 2.—NITRATE-MIXTURE.

The term “nitrate-mixture” means any preparation, other than gunpowder ordinarily so called formed by the mechanical mixture of a nitrate with any form of carbon or with any carbonaceous substance not possessed of explosive properties, whether sulphur be or be not added to such preparation and whether such preparation be or be not mechanically mixed with any other non-explosive substance, and includes any explosive containing a perchlorate and not being a chlorate-mixture, fulminate or nitro-compound as defined in Rule 4 of the Indian Explosives Rules, 1914.

EVERY BLASTING EXPLOSIVE IN THIS CLASS IN WHICH NITRATE OF AMMONIUM, NITRATE OF SODIUM OR CHLORIDE OF SODIUM ARE USED AS INGREDIENTS, SHALL BE CONTAINED IN CARTRIDGE WRAPPERS OR CASES (OR IN FIVE-POUND INNER PACKAGES) MADE THOROUGHLY WATERPROOF WITH MELTED PARAFFIN OR OTHER SUITABLE WATERPROOFING MATERIAL.

Bobbinite.

Cardox Composition.

CLASS 3.—NITRO-COMPOUND.

The term “nitro-compound” means any chemical compound possessed of explosive properties or capable of combining with metals to form an explosive compound, which is produced by the chemical action of nitric acid (whether mixed or not with sulphuric acid) or of a nitrate mixed with sulphuric acid upon any carbonaceous substance, whether such compound is mechanically mixed with other substances or not.

The nitro-compound class has two divisions.

EVERY EXPLOSIVE IN THIS CLASS AND EVERY EXPLOSIVE INGREDIENT THEREOF SHALL BE SO THOROUGHLY PURIFIED AND OTHERWISE OF SUCH CHARACTER AS TO SATISFY A TEST KNOWN AS THE HEAT TEST, AND SPECIFIED IN THE RULE FOR TESTING EXPLOSIVES PUBLISHED WITH GOVERNMENT OF INDIA, DEPARTMENT OF COMMERCE AND INDUSTRY, NOTIFICATION No. 4013—33, DATED THE 6TH JUNE 1914, REFERRED TO ABOVE.

EVERY BLASTING EXPLOSIVE IN THIS CLASS, IN WHICH NITRATE OF AMMONIUM, NITRATE OF SODIUM, CHLORIDE OF SODIUM OR NITRO-GLYCOL ARE USED AS INGREDIENTS, SHALL BE CONTAINED IN CARTRIDGE WRAPPERS OR CASES (OR IN FIVE-POUND INNER PACKAGES) MADE THOROUGHLY WATERPROOF WITH MELTED PARAFFIN OR OTHER SUITABLE WATERPROOFING MATERIAL.

BLASTING EXPLOSIVES IN THIS CLASS MARKED “S” MAY BE SHEATHED ON THE OUTSIDE OF THE CARTRIDGE BUT NOT AT THE ENDS WITH AN APPROVED SHEATHING MATERIAL. THE OUTER WRAPPER OF ANY SHEATHED CARTRIDGE SHALL BE SUFFICIENTLY STRONG TO PREVENT THE ESCAPE OF

ANY OF THE SHEATHING MATERIAL WHEN THE CARTRIDGE IS SUBMITTED TO THE JOLTING TEST. IF FIREPROOFING MATERIAL IS USED FOR THE OUTER WRAPPER IT MUST NOT INTERACT IN ANY WAY WITH THE SHEATHING MATERIAL. PROVIDED THAT WHEN BICARBONATE OF SODA IS USED AS A SHEATHING MATERIAL THE CARTRIDGE SHALL BE THOROUGHLY WATER-PROOFED WITH PARAFFIN WAX OR A MIXTURE OF CERESINE AND RESIN.

DIVISION I.

Division 1 comprises the following explosives and any chemical compound or mechanically mixed preparation which consists either wholly or partly of nitro-glycerine or of some other liquid nitro-compound:—

A. I. Rounkol "S".		Geobel No. 3.
A. 2 Monobel.		Improved Ballistite.
Ammon Gelignite	} differing from the corresponding Polar Ammon Gelignite only in containing nitrated Glycerine unalixed with Poly. Glycerine or Ethylene Glycol.	L. G. Gelatine.
Ammon Gelignite No. 2		Monobel No. 1.
Ammon Gelignite No. 3		Nobel Cordite.
		Nobel's Explosive No. 673.
		N. S. Gelatine Dynamite.
		N. S. Gelignite.
		Nacota Powder.
Ardeer Gelignite		Polar Ammon Gelatine Dynamite.
Ballistite		Polar Ammon Gelignite.
Blasting Gelatine		Polar Ammon Gelignite No. 2.
Chilworth Smokeless Powder No. 2.		Polar Ammon Gelignite No. 3.
Cordite.		Polar Dynobel No. 2, "S".
Cordite, M. D.		Quarry Monobel.
Dynobel No. 2.		Rockite.
Gelatine Dynamite.		Samsonite.
Gelignite.		Samsonite.
Geobel.		Somsonite No. 3.
Geobel No. 2.		Stonobel.
		Victor Powder No. 2.

PROVIDED THAT EVERY EXPLOSIVE IN THIS DIVISION SHALL BE OF SUCH CHARACTER AND CONSISTENCY AS NOT TO BE LIABLE TO LIQUEFACTION OR EXUDATION.

PROVIDED ALSO THAT AN EXPLOSIVE WHICH IS REQUIRED BY DEFINITION TO BE ISSUED IN WATERPROOF INNER PACKAGES MAY BE EXEMPTED FROM SUCH REQUIREMENT BY SPECIAL AUTHORITY, WHEN AND SO LONG AS THE CONDITIONS OF SUCH AUTHORITY ARE OBSERVED.

DIVISION 2.

Division 2 comprises the following explosives and any nitro-compound as before defined which is not comprised in Division 1 :—

Alumatol	}	Nobel Rim Neonite.
Ammonal		
Amberite No. 2.		Pieric Acid.
Baelenite.		Pieric Powder.
Cyclotrimethylene—Trinitramine, thoroughly purified.		Roburite No. 4.
Di-nitro-phenol, commercially pure.		Schultze Gunpowder.
E. C. Sporting Powder.		Smokeless Diamond.
Empire Powder.		Tonite or Cotton Powder No. 1.
Guncotton.		Tonite or Cotton Powder No. 2.
Light Load Smokeless.		Tonite No. 3.
Negro Powder No. 2.		Tri-nitro-toluol, commercially pure.

CLASS 4.—CHLORATE MIXTURE.

The term "chlorate mixture" means any explosive containing a chlorate.

The chlorate mixture class has two divisions.

EVERY EXPLOSIVE IN THIS CLASS AND EVERY EXPLOSIVE INGREDIENT THEREOF SHALL BE SO THOROUGHLY PURIFIED AND OTHERWISE OF SUCH CHARACTER AS TO SATISFY A TEST KNOWN AS THE HEAT TEST, AND SPECIFIED IN THE RULE FOR TESTING EXPLOSIVES PUBLISHED WITH GOVERNMENT OF INDIA, DEPARTMENT OF COMMERCE AND INDUSTRY, NOTIFICATION NO. 4013—33, DATED THE 6TH JUNE 1914, REFERRED TO ABOVE.

EVERY BLASTING EXPLOSIVE IN THIS CLASS, IN WHICH NITRATE OF AMMONIUM, NITRATE OF SODIUM OR CHLORIDE OF SODIUM ARE USED AS INGREDIENTS, SHALL BE CONTAINED IN CARTRIDGE WRAPPERS OR CASES (OR IN FIVE-POUND INNER PACKAGES) MADE THOROUGHLY WATERPROOF WITH MELTED PARAFFIN OR OTHER SUITABLE WATERPROOFING MATERIAL.

DIVISION 1.

Division 1 comprises any chlorate preparation which consists partly of nitro-glycerine or of some other liquid nitro-compound.

Nil.

PROVIDED THAT EVERY EXPLOSIVE IN THIS DIVISION SHALL BE OF SUCH CHARACTER AND CONSISTENCY AS NOT TO BE LIABLE TO LIQUEFACTION OR EXUDATION OF NITRO-GLYCERINE.

DIVISION 2.

Division 2 comprises any chlorate mixture as hereinbefore defined which is not comprised in Division 1.

Nil.

CLASS 5.—FULMINATE.

The term "fulminate" means any chemical compound or mechanical mixture, whether included in the foregoing classes or not, which, from its great susceptibility to detonation, is suitable for employment in percussion caps or any other appliances for developing detonation, or which, from its extreme sensibility to explosion, and from its great instability (that is to say, readiness to undergo decomposition from very slight exciting causes), is especially dangerous.

This class consists of two divisions.

DIVISION 1.

Division 1 comprises such compounds as the fulminates of silver and of mercury, and preparations of those substances, such as are used in percussion caps and any preparation consisting of a mixture of a chlorate with phosphorus or certain descriptions of compounds of phosphorus, with or without the addition of carbonaceous matter, and any preparation consisting of a mixture of a chlorate with sulphur, or with a sulphuret, with or without carbonaceous matter.

Nil.

DIVISION 2.

Division 2 comprises such substances as the chloride and the iodide of nitrogen, fulminating gold and silver, diazobenzol, the nitrate of diazobenzol lead azide and tetrazene.

Nil.

CLASS 6.—AMMUNITION.

The term "ammunition" means any explosive of any of the foregoing classes when the same is enclosed in any case or contrivance, or is otherwise adapted or prepared so as to form a cartridge or charge for small-arms, canon or any other weapon, or to form any safety or other fuze for blasting or for shells, or to form any tube for firing explosives or to form a percussion cap, detonator, fog-signal, shell, torpedo, war-rocket, or any other contrivance other than a firework.

The term "percussion cap" does not include a detonator.

The term "detonator" means a capsule or case which is of such strength and construction and contains an explosive of the fulminate-explosive class—in such quantity that the explosion of one capsule or case will communicate the explosion to other like capsules or cases.

The ammunition class has three divisions.

DIVISION 1.

Nobel's Safety Electric Fuzes.

Percussion caps, each consisting of a capsule or case of metal containing of explosive of the 5th (Fulminate) Class, not more than 0.5 of a grain, the said explosive being covered and protected by a coating of tin-foil or other material approved by the Chief Inspector of Explosives in India, and the said capsule or case not containing an anvil; provided that where the proportion of fulminate of mercury in the composition does not exceed 25 per cent., the above limit may be increased to 0.6 of a grain. Provided also that the whole is of such strength and construction that the ignition of one such cap will not ignite other like caps.

Railway Fog-Signals, of such strength and construction, and containing an explosive in such quantity that the explosion of one such signal will not communicate the explosion to other like signals.

Safety Cartridges, consisting of cartridges for small arms, of which the cases can be extracted from the small arm after firing, and which are so closed as to prevent any explosion in one cartridge being communicated to other cartridges.

Safety Fuze, consisting of fuze for blasting which burns and does not explode, and which does not contain its own means of ignition, and which is of such strength and construction and contains an explosive in such quantity that the burning of such fuze will not communicate laterally with other like fuzes.

DIVISION 2.

Division 2 comprises any ammunition as hereinbefore defined, which does not contain its own means of ignition and is not included in Division 1.

Cartridges for Small Arms other than
Safety Cartridges.

Cordeau Bickford.

Cordtex.

Detonating Fuze.

Electric Fuzes.

Electric Primers.

"Fuze Igniters, each consisting of a case of paper charged with a mixture of nitrate of barium, peroxide of barium, chlorate of sodium, chlorate of potassium, sulphate of barium, rosin, zinc dust, mealie meal, French chalk and linseed oil, and not containing its own means of ignition. Provided that the amount of composition in any one igniter shall not exceed 340 grains and when ignited the time of burning shall not be less than three and a half minutes (for importation only)."

Instantaneous Fuze.

Quick Match.

Tubes for firing explosives.

DIVISION 3.

Division 3 comprises any ammunition as hereinbefore defined which contains its own means of ignition, and is not included in Division 1.

Cartridges for Small Arms which are not
Safety Cartridges.

Detonators.

*"Electric Boosters" provided on arrival
in India the packages are marked
"Not to be stored or transported with
other explosives".*

Electric Detonators.

Friction Tubes.

Nobel's Electric Delay Action
Detonators.

Percussion Primers.

Tubes for firing Explosives.

CLASS 7.—FIREWORK.

The term "firework" comprises firework composition and manufactured fireworks.

DIVISION 1.

FIREWORK COMPOSITION.

The term "firework composition" means any chemical compound or mechanically mixed preparation of an explosive of inflammable nature, which is used for the purpose of making manufactured fireworks, and is not included in the former classes of explosives, and also any star and any coloured fire composition subject to the proviso to the definition of manufactured fireworks.

Nil.

DIVISION 2.

MANUFACTURED FIREWORKS.

MANUFACTURED FIREWORKS, consisting of any explosive of the classes 1, 2, 3, 4 and 6 and any firework composition, when such explosive or composition is enclosed in any case or contrivance or is otherwise manufactured so as to form a squib, cracker including Chinese crackers, toy cap or amorce, serpent, rocket (other than a war-rocket), meroon, lancea, wheel, Chinese fire, Roman candle, or other article especially adapted for the production of pyrotechnic effects, or pyrotechnic signals or sound signals :

Provided that a substantially constructed and hermetically closed metal case, containing not more than one pound of coloured fire composition of such a nature as not to be liable to spontaneous ignition shall be deemed to be a "manufactured firework" and not a "firework composition".

Amorces, whether in the form of toy caps or igniting tapes, containing not more than 70 grains of explosive composition to every 1,000 dots of such composition.

Aluminium Torches,	} provided the composition contains no chlorates.
Electric and other Sparklers,	
Magnesium Torches,	

Chinese Crackers made from a gunpowder or nitrate mixture containing no chlorates.

Distress Signal Rockets.

Explosive Discs	} each consisting of a recessed disc, square, or rectangle of cardboard containing a composition in the recess covered with paper and containing not more than 0.4 grains of composition per disc. The discs when packed for conveyance shall be in stout cardboard boxes the material being not less than one-twentieth of an inch thick, each containing not more than twenty-four discs. The discs shall be inserted in perforations in a cardboard sheet one-sixteenth of an inch thick attached to the bottom of the box and covered with a layer or sheets of corrugated paper of a total thickness of not less than one quarter of an inch. The size of the box shall be such as to allow not less than three-quarters of a square inch of superficial space per disc. Provided also that not more than 13,824 discs shall be packed together in one outer package and the said outer package shall contain no other fireworks.
Giant Disc Amorces,	

Lances, provided the composition does not contain at the same time chlorates and sulphur or sulphides or aluminium.

Magic Pebbles, each consisting of a pebble or clay ball, not more than two inches in diameter and covered with not more than 35 grains of a composition consisting of chlorate of potassium, sesqui sulphide of phosphorus, gum arabic, carbonate of magnesium, carbonate of calcium and oxide of iron :

Provided that the proportions of chlorate of potassium and sesqui sulphide of phosphorus do not exceed 30 per cent. and 15 per cent. respectively and the proportion of gum arabic is not less than 25 per cent. of the finished mixture :

Provided also that the composition is protected by a covering of paper.

Mareons made from a gunpowder or nitrate mixture containing no chlorates.

Pyrotechnic Matches.

Rockets,
Roman Candles,
Wonder Candles, } made from a gunpowder or nitrate mixture
 containing no chlorates and provided the stars do not contain at the same time chlorate and sulphur, or sulphide or aluminium and stars containing a chlorate are separated from contact with the gunpowder or nitrate mixture.

Serpents made from a gunpowder or nitrate mixture containing no chlorates.

Socket Light Signals.

Socket Distress Signals.

Socket Sound Signals.

Squibs made from a gunpowder or nitrate mixture containing no chlorates.

Very Signal Cartridges.

Wheels containing no chlorates.

G. PEACE, F.I.C., F.R.A.S.,
Chief Inspector of Explosives in India.

APPENDIX F.

(See paragraph 11 of the Report.)

List of Petroleum and Carbide of Calcium premises as recorded in the office of the Chief Inspector of Explosives on 31st December 1938.

Presidency or Province.	District.	No.	Presidency or Province.	District.	No.
Ajmer-Merwara.	Ajmer . . .	22		Brought forward .	87
	TOTAL .	22			
Assam . . .	Cachar . . .	23	Bengal—contd.	Calcutta . . .	285
	Darrang . . .	51		Chittagong . . .	14
	Goalpara . . .	8		Dacca . . .	25
	Kamrup . . .	23		Darjeeling . . .	24
	Khasi & Jaintia Hills.	5		Dinajpur . . .	10
	Lakhimpur . . .	144		Faridpur . . .	14
	Naga Hills . . .	3		Hooghly . . .	19
	Nowgong . . .	17		Howrah . . .	59
	Sibsagar . . .	109		Jalpaiguri . . .	74
	Sylhet . . .	43		Jessore . . .	7
	Sadiya Frontier Tract.	3		Khulna . . .	9
	TOTAL .	429		Malda . . .	1
Baluchistan . . .	Loralai . . .	4		Midnapore . . .	34
	Quetta . . .	15		Murshidabad . . .	10
	Sibi . . .	3		Mymensingh . . .	21
	Zhob . . .	2		Nadia . . .	18
	TOTAL .	24		Noakhali . . .	6
Bengal . . .	Backerganj . . .	19		Pabna . . .	12
	Bankura . . .	9		Rajshahi . . .	10
	Birbhum . . .	6		Rangpur . . .	20
	Bogra . . .	13		Tippera . . .	16
	Burdwan . . .	40		24-Parganas . . .	90
	Carried over .	87		TOTAL .	874

APPENDIX F—contd.

List of Petroleum and Carbide of Calcium premises as recorded in the office of the Chief Inspector of Explosives on 31st December 1938—contd.

Presidency or Province.	District.	No.	Presidency or Province.	District.	No.
Bihar . . .	Bhagalpore . . .	23	Bombay—contd.	Brought forward . . .	547
	Champaran . . .	25		East Khandesh . . .	28
	Darbhanga . . .	25		West Khandesh . . .	31
	Gaya	30		Kolaba	20
	Hazaribagh . . .	32		Nasik	54
	Manbhum	49		Panch Mahals . . .	16
	Monghyr	21		Poona	87
	Muzaffarpur . . .	22		Ratnagiri	38
	Palamau	5		Satara	42
	Patna	37		Sholapur	53
	Purnea	15		Surat	55
	Ranoli	15		Thana	31
	Saran	16		TOTAL	1,011
	Shahabad	18			
	Singhbhum	44			
	Sonthal Parganas .	15			
	TOTAL	302			
Bombay . . .	Ahmedabad	66	Central Pro- vinces.	Akola	35
	Amednagar	36		Amraoti	38
	Belgaum	50		Balaghat	8
	Bijapur	31		Betul	9
	Bombay	245		Bhandara	18
	„ Suburban	29		Bilaspur	17
	Broach	18		Buldana	30
	Dharwar	50		Chanda	17
	Kaira	34		Chhindwara	15
	Kanara	15		Damoh	5
	Carried over	547		Carried over	192

APPENDIX F—*contd.*

List of Petroleum and Carbide of Calcium premises as recorded in the office of the Chief Inspector of Explosives on 31st December 1938—contd.

Presidency or Province.	District.	No.	Presidency or Province.	District.	No.
Central Provinces— <i>contd.</i>	Brought forward .	192	Madras— <i>contd.</i>	Brought forward .	215
	Drug . . .	12		Guntur . . .	40
	Hoshangabad . .	15		Kistna . . .	26
	Jubbulpore . . .	30		Kurnool . . .	17
	Mandla . . .	1		Madras . . .	137
	Nagpur . . .	59		Madura . . .	48
	Narsingpur . . .	7		Malabar . . .	65
	Nimar (Khandwa) .	12		Nellore . . .	21
	Raipur . . .	23		The Nilgiris . .	22
	Saugor . . .	13		North Arcot . .	41
	Seoni . . .	4		Ramnad . . .	47
	Wardha . . .	21		Salem . . .	29
	Yeotmal . . .	18		South Arcot . .	41
	TOTAL .	405		South Kanara .	32
Coorg . . .	Coorg . . .	7		Tanjore . . .	69
	TOTAL .	7		Tinnevely . . .	32
Delhi . . .	Delhi . . .	80		Trichinopoly . .	32
	TOTAL .	80		Vizagapatam . .	40
Kolhapur and Deccan States.	. . .	5		Cochin . . .	1
	TOTAL .	5		Travancore . . .	2
				TOTAL .	957
Madras . . .	Anantapur . . .	25	North-West Frontier Province.	Bannu . . .	10
	Bellary . . .	30		Dera Ismail Khan .	14
	Chingleput . . .	10		Hazara . . .	10
	Chittoor . . .	15		Kohat . . .	9
	Coimbatore . . .	58		Peshawar . . .	40
	Cuddapah . . .	16		Swat & Chitral Agency, .	2
	East Godavari . .	28			
	West Godavari . .	24			
	Carried over .	215		TOTAL .	85

APPENDIX F—contd.

List of Petroleum and Carbide of Calcium premises as recorded in the office of the Chief Inspector of Explosives on 31st December 1938—contd.

Presidency or Province.	District.	No.	Presidency or Province.	District.	No.
Orissa . . .	Balasore . . .	17	Punjab—contd.	Brought forward . . .	400
	Cuttack . . .	22		Montgomery . . .	22
	Ganjam . . .	15		Multan . . .	24
	Koraput . . .	2		Muzaffargarh . . .	3
	Puri . . .	13		Patjala . . .	2
	Sambalpur . . .	13		Rawalpindi . . .	54
	TOTAL . . .	82		Rohtak . . .	22
Punjab . . .	Ambala . . .	33		Sargodah . . .	1
	Amritsar . . .	30		Shahpur . . .	11
	Attock . . .	10		Sheikhupura . . .	15
	Dera Ghazi Khan . . .	5		Sialkot . . .	14
	Ferozepur . . .	33		Simla . . .	1
	Gujranwala . . .	18		TOTAL . . .	569
	Gujrat . . .	6		Dadu . . .	3
	Gurdaspur . . .	22		Hyderabad . . .	14
	Gurgaon . . .	9		Karachi . . .	80
	Hissar . . .	7		Larkana . . .	4
	Hoshiarpur . . .	16	Sind . . .	Nawabshah . . .	5
	Jhang . . .	10		Sukkur . . .	8
	Jhelum . . .	10		Thar and Parkar . . .	8
	Jullundur . . .	23		Upper Sind Frontier . . .	3
	Kangra . . .	5		TOTAL . . .	125
	Karnal . . .	20		Agra . . .	25
	Lahore . . .	78		Aligarh . . .	10
	Ludhiana . . .	24		Allahabad . . .	32
	Lyallpur . . .	35		Almora . . .	3
	Mianwali . . .	6		Carried over . . .	79
	Carried over . . .	400	United Provinces.		

APPENDIX F—contd.

List of Petroleum and Carbide of Calcium premises as recorded in the office of the Chief Inspector of Explosives on 31st December 1938—concl'd.

Presidency or Province.	District.	No.	Presidency or Province.	District.	No.
United Provinces—contd.	Brought forward .	70	United Provinces—concl'd.	Brought forward .	343
	Azamgarh . . .	0		Hardoi . . .	4
	Bahraich . . .	8		Jalaun . . .	3
	Ballia . . .	0		Jaunpur . . .	0
	Banda . . .	0		Jhansi . . .	32
	Bara Banki . . .	0		Kheri . . .	7
	Baroilly . . .	18		Lucknow . . .	37
	Basti . . .	8		Mainpuri . . .	8
	Benares . . .	18		Meerut . . .	32
	Bijnor . . .	11		Mirzapur . . .	0
	Budaun . . .	4		Moradabad . . .	10
	Bulandshahr . . .	10		Muttra . . .	10
	Cawnpore . . .	35		Muzaffarnagar . . .	13
	Dehra Dun . . .	10		Naini Tal . . .	12
	Etah . . .	8		Partabgarh . . .	0
	Etawah . . .	0		Pilibhit . . .	3
	Farrukhabad . . .	10		Rao Bareilly . . .	0
	Fatehpur . . .	1		Saharanpur . . .	23
	Fyzabad . . .	8		Shahjahanpur . . .	0
	Garhwal . . .	0		Sitapur . . .	0
	Ghazipur . . .	5		Sultanpur . . .	2
	Gonda . . .	12		Unao . . .	5
	Gorakhpur . . .	34			
	Hamirpur . . .	7			
	Carried over .	343		TOTAL .	603

APPENDIX F—*concl.*
SUMMARY.

Presidency or Province.	No.
Ajmer-Merwara	22
Assam	429
Baluchistan	24
Bengal	874
Bihar	392
Bombay	1,011
Central Provinces	405
Coorg	7
Delhi	80
Kolhapur and Deccan States	5
Madras	957
North-West Frontier Province	85
Orissa	82
Punjab	569
Sind	125
United Provinces	603
Total .	5,670

APPENDIX G.

(See paragraphs 17 and 25 of the Report.)

Accidents by fire or explosion which have been brought to the notice of the Explosives Department from 1st January 1938 to 31st December 1938.

EXPLOSIVES.

Gunpowder.

1. 2nd January 1938. Kajora. No one injured.—A fire and explosion occurred in the gunpowder magazine of Mr. K. C. Pal Chowdhury at Kajora on the 2nd January 1938 which was licensed in form E of the Indian Explosives Rules, 1914. The magazine was blown to pieces, fortunately no one was injured. The exact cause of the fire could not be ascertained.

2. 27th February 1938. Coimbatore. 2 killed.—A licensed vendor and his assistant were drying gunpowder in the licensed premises when an explosion took place injuring them fatally. The cause of the explosion could not be ascertained.

3. 10th March 1938. Pudukhottam. 1 killed.—Fire was brought near a quantity of gunpowder spread out to dry when the powder ignited fatally injuring the workman.

4. 12th March 1938. Khowra. 2 killed.—A fire broke out in one of the mixing sheds of the gunpowder factory belonging to the contractors of the Khowra Salt mines on the 12th March 1938 resulting in the death of 2 persons, who were working there at the time. The cause of the fire could not be ascertained but it was, according to the statements of the workmen, due to a spark which ignited the powder.

5. 10th April 1938. Mile 40 of the Dharamtar Mahabaleswar Road. 1 killed and 1 injured.—Two labourers were charging a hole with gunpowder for the next shot and tamping the powder with an iron bar when there was an explosion. Both of them sustained injuries which proved fatal in the case of one.

6. 18th April 1938. Pallapatti. 2 injured.—While loading a shot hole for blasting a rock, the charge of gunpowder exploded and injured 2 persons. One of the injured persons was convicted and sentenced to pay a fine of Rs. 10 or in default to undergo simple imprisonment for one week.

6-A. 25th May 1938. Parasia. No one injured.—A fire causing damage estimated at Rs. 600 broke out in the licensed premises of the Newton Chikhl Collieries at Parasia. Fortunately no one was injured. The fire was due to the throwing of a burning match igniting gunpowder dust on the floor of the premises.

7. 26th May 1938. Vambori. 3 killed.—While a woman was grinding a gunpowder mixture the mixture ignited causing fatal injuries to the woman and to two others who were playing near by.

8. 2nd June 1938. Sithur. 1 injured.—During the course of a temple festival, hot tubes were being charged with gunpowder when the powder caught fire causing injuries to the person concerned.

9. 23rd July 1938. Pasuvanthanai. 2 killed.—An explosion on premises licensed for the manufacture and possession of gunpowder was apparently caused by grinding a gunpowder mixture in a mortar containing grit. As the licensee had contravened one of the conditions of the licence his licence was cancelled.

10. 25th August 1938. Madukkarai. 2 injured.—Two coolies were digging holes for blasting while keeping a small tin containing gunpowder open, by their side. When a spark from the lighter of another cooly carried by the heavy wind fell into the tin and ignited the powder injuring both of them.

11. 2nd September 1938. Kalimangalam. 2 injured.—During a temple festival a person was recharging a tube with gunpowder when it exploded and injured him and another person who was assisting him.

12. 10th September 1938. Tambaram. 1 injured.—A person engaged in blasting a rock was cleaning a hole containing an unexploded charge with an iron rod when the charge exploded causing him injuries.

13. 20th October 1938. Kattumannareoli. 1 killed.—An explosion resulting in the death of the licensee occurred in an unlicensed place illegally used for the storage of loose gunpowder and manufactured fireworks while the deceased was loading a hot iron tube with loose gunpowder. The conflagration spread to all the adjoining thatched shops completely destroying them.

14. 13th November 1938. Bansdeopur. No one injured.—An explosion occurred in the licensed premises of the Bansdeopur Colliery on the 13th November 1938 as a result of which the side walls and the roof of the premises were badly cracked and the entrance door was blown to pieces. No one was however injured. The exact cause of the explosion could not be ascertained but it was believed that some dissatisfied employee or ex-employee of the colliery must have done this mischief by igniting the gunpowder.

15. 16th December 1938. Samayapuram. 1 killed.—A person set fire to a small quantity of wet gunpowder which caught fire and ignited a bundle containing gunpowder kept in the vicinity.

16. 30th December 1938. Nalligoundapalaiyam. 1 injured.—During a funeral procession an iron cylinder charged with gunpowder exploded prematurely causing injuries to the person concerned.

Nitro-compound.

17. 14th April 1938. Ghagra. 2 killed and 1 injured.—In connection with the carrying out of a Seismic Survey by the Burmah Oil Co. Ltd., Masimpur, involving the firing of charges of explosives in shot holes drilled at various points, the blaster and his two assistants were preparing a charge in a tent on the day of occurrence when there was an explosion resulting in the death of the blaster and one of the assistants and injuries to the other. The explosion appeared to have been caused by the blaster who failed to carry out certain standing instructions and by the use of an unsuitable shot firing machine.

Ammunition.

18. 15th April 1938. Arkonam. 1 injured.—A cooly while shovelling coal out of a railway wagon was injured by the explosion of a detonator which was amongst the coal in the wagon.

Fireworks.

19. 20th January 1938. Salem. 5 killed and 2 injured.—A serious fire and explosion resulting in the death of five persons and injuries to two others occurred in a building which was licensed for the storage and sale of fireworks but where unlawful manufacture of fireworks was being carried on on the day of occurrence. The cause of the explosion on the evidence available appeared to be due to the thoughtless throwing of a glowing *bidi* end by one of the workers on a tin containing a paste of a sensitive chlorate mixture in spirit. The licensee was convicted and sentenced to undergo simple imprisonment for eight months under Sections 304A, 338 and 337 of the Indian Penal Code and to pay a fine of Rs. 50 or in default to undergo simple imprisonment for one month under the Explosives Rules.

20. 17th February 1938. Eranjoly. 3 killed and 2 injured.—An explosion resulting in the death of 3 persons and injuries to two others occurred while fireworks were being unloaded from a hand cart. The exact cause of the explosion could not be ascertained but it was reported that the persons in charge of the hand cart were all drunk and smoking *bides* at the time. Both the manufacturer and his attendant were convicted and sentenced to pay a fine of Rs. 20 and Rs. 5 respectively or in default to undergo rigorous imprisonment for 20 and 5 days respectively.

21. 5th March 1938. Aska. 1 injured.—A person sustained injuries by the explosion of a mixture of potassium chlorate and sulphur which he was grinding for the preparation of crackers. He was convicted and sentenced to pay a fine of Rs. 20 or in default to undergo simple imprisonment for 10 days.

22. 8th March and 2nd May 1938. Calcutta. No one injured.—A parcel containing a toy pistol and 100 disc amorces despatched by the Globo Trading Co., Fort, Bombay, exploded in the Import Parcel Department of the General Post Office, Calcutta, on the 8th March 1938. A second explosion of a similar nature also occurred in the General Post Office, Calcutta on the 2nd May 1938. Fortunately no one was injured in the explosions. A similar parcel on examination was found to contain an explosive mixture of chlorate of potassium and red phosphorus.

Under clause 19 of the Indian Postal Act of 1898 transmission by post of explosives and under Section 11, Clause 96(4) of the Postal and Telegraph Guide transmission by Post of amorces is prohibited.

23. 14th March 1938. Pattoor. 1 injured.—While exploding a packet containing a mixture of potassium chlorate and sulphur by hitting it with a stone, a few broken chips struck the boy injuring him.

24. 15th March 1938. Bhita. 1 killed and 1 injured.—An explosion resulting in the death of an employee of the licensee and injury to another person occurred in licensed premises at Bhita. The explosion according to the licensee's own statement was due to his servant having stumbled against a bundle containing some throwdowns prepared from a mixture of potassium chlorate and sulphide of arsenic which exploded.

25. 12th April 1938. Kavassorry. 3 killed and 1 injured.—Three workmen of a licensee died and one was injured as a result of an explosion which took place when they were preparing fireworks with gunpowder (?) The exact cause of the explosion could not be ascertained.

26. 13th April 1938. Moyyam. 1 killed.—A person was preparing throwdowns with a mixture of potassium chlorate and arsenic sulphide when there was an explosion injuring him fatally.

27. 14th April 1938. Edakara Amson. 4 injured.—Four persons were injured by the explosion of a mixture of potassium chlorate and sulphide of arsenic with which one of them was preparing crackers at the time. The accused was convicted and sentenced to pay a fine of Rs. 15 or in default to undergo simple imprisonment for one month.

28. 15th April 1938. Madura. 1 killed.—A boy died as the result of a fireworks explosion when a display was in progress.

29. 22nd April 1938. Calcutta. 2 injured.—Two boys sustained injuries by the explosion of a cracker containing a sensitive mixture of potassium chlorate and sulphide of arsenic which was thrown at them by some unknown person.

30. 13th May 1938. Puttur. 2 killed and 5 injured.—While the servant of a licensee was pounding a mixture of saltpetre, sulphur and charcoal, the mixture exploded and a fire broke out as a result of which he sustained injuries on his person.

After the fire was put out the licensee brought out from under the debris a wooden box containing some explosive colour balls used for rockets when the contents suddenly exploded and caused injuries to himself and 5 other persons who had gathered to witness the fire. Two of the injured subsequently succumbed to their injuries. The licensee was prosecuted under Sections 304A, 337 and 338 of the Indian Penal Code and Rule 138 of the Indian Explosives Rules but subsequently discharged for want of proof.

31. 31st May 1938. Pollachi. 1 killed and 2 injured.—Three persons were engaged in blasting a well. One of them chopped off a portion of fuse for insertion in a hole charged with gunpowder by using a steel bar against the rock. The resulting spark ignited the fuse as well as some quantity of gunpowder kept on the spot. All the three persons were injured, one of them fatally.

32. 11th June 1938. Patna. 2 injured.—Two boys were preparing crackers with a mixture of potassium chlorate and sulphide of arsenic when the mixture exploded injuring both of them. The accused was convicted under Section 286 of the Indian Penal Code but on his pleading guilty was subsequently released under Section 562 of the Criminal Procedure Code after due admonition.

33. 16th June 1938. Lahore. 1 killed and 2 injured.—A fire resulting in the death of one person and injuries to two others occurred in a licensed firework shop outside Shahalmi Gate, Lahore. The shop which was one of a row of shops was used by the licensee to manufacture fireworks in contravention of the conditions of his licence. The licensed shop as well as the adjoining baker's shop were completely destroyed. The cause of the fire could not be ascertained. The licence was cancelled as the place used for the manufacture of fireworks was not in accordance with the conditions of the licence.

34. 16th June 1938. Padupatti. One killed and one injured.—During a marriage procession a person set fire to a rocket which exploded prematurely causing injuries to him and to a girl who was standing by his side. The injuries proved to be fatal in the case of the latter. The accused was prosecuted under Section 301A of the Indian Penal Code but was subsequently discharged under Section 253(1) of the Criminal Procedure Code.

35. 18th June 1938. Karadikoli. 1 killed and 3 injured.—During a marriage procession a person lighted a rocket which burst while in his hand causing injuries to him and to three onlookers. In one case the injuries proved to be fatal.

36. 21st June 1938. Calcutta. 1 killed and one injured.—Two boys were setting fire to a Patka made with potassium chlorate, sulphide of arsenic, etc., when it burst and injured both of them. One of the boys succumbed to his injuries.

37. 26th June 1938. Eravangudi. 1 injured.—During the display of fireworks in connection with a temple festival, a tube, charged with gunpowder prematurely exploded causing injuries to a boy.

38. 1st July 1938. Sadipur. Six injured.—During the display of fireworks a spark from a burning fireworks fell on a tin canister containing firework mixture which exploded and injured six persons. The accused was convicted under Section 301A of the Indian Penal Code and sentenced to undergo rigorous imprisonment for six months.

39. 17th July 1938. Calcutta. 1 injured.—A boy was injured by the explosion of a mixture of potassium chlorate and arsenic sulphide with which he was preparing crackers. He was produced before the Deputy Commissioner of Police, North Calcutta and warned by him.

40. 27th July 1938. Kurumbalur. 2 injured.—A labourer found a tin vessel containing five explosives ball made from a mixture of potassium chlorate and arsenic sulphide in a field. He took out one of the balls thinking it to be a wood apple, placed it on a stone and hit it with the result that the ball exploded injuring him and another boy who was standing by.

41. 12th August 1938. Mitta Kaduvatti. 1 injured.—At a display of fireworks in connection with a temple festival one of the fireworks exploded prematurely injuring the person lighting it.

42. 14th August 1938. Dehra Dun. 1 killed.—While a person was opening a soda water bottle it slipped from his hands and fell into a basket containing some crackers obviously prepared from a mixture of potassium chlorate and sulphide of arsenic. The crackers exploded and injured the person fatally.

43. 14th August 1938. Pakkam village, Madras. 1 injured.—A man got injured when he picked up an unexploded rocket which suddenly burst.

44. 7th September 1938. Thathiengarpot. 1 injured.—At a display of fireworks accompanying a marriage procession, a spark from a burning firework fell on another firework which exploded and injured the person who was holding it.

45. 20th September 1938. Tando Allahyar. 2 killed.—The servant of a licensee and his wife were preparing crackers probably with a sensitive mixture on the licensed premises. A spark from a *bidi* which the servant was smoking at the time ignited the mixture and injured both of them fatally.

46. 29th September 1938. Wadi Bunder. No one injured.—A case containing explosives caught fire in the goods shed No. 11 at Wadi Bunder before it was actually tendered to the Railway staff. The fire was however promptly extinguished by the Railway staff and the case immediately removed from the Railway premises. No damage was caused to the Railway property or other goods stocked in the shed.

47. 4th October 1938. Kumbakonam. Six killed and 2 injured.—A serious explosion resulting in the death of six persons and injuries to two others occurred when fireworks were being illegally prepared with a highly sensitive mixture of potassium chlorate, sulphur and aluminium powder, in a building licensed for their storage. As a result of the explosion the roof of the building and the walls on the northern and southern sides were blown off. The cause of the explosion on the evidence available appeared to be the ramming of the firework mixture too tightly in one of the cardboard containers.

The accused was convicted and sentenced to pay a fine of Rs. 5 under Section 19 (f) of the Indian Arms Act, Rs. 10 under Section 286, Indian Penal Code, Rs. 10 under Sub-Section 3 of Section 6 of the Explosives Act and Rs. 10 under Clause (9) of the table appended to rule 138 of the Indian Explosives Rules, 1914.

48. 10th October 1938. Serampore. 1 injured.—A person was carrying home some patakas containing a sensitive mixture when they exploded and injured him.

49. 11th October 1938. Sultanwind. 5 killed and 5 injured.—A serious fire resulting in the death of 5 persons and injuries to 5 others occurred in the licensee's house which was unlawfully used for the manufacture and storage of fireworks. The fire was due to some boys playing on the road throwing a burning sparkler onto the pile of fireworks stored in the house.

50. 12th October 1938. Calcutta. 1 killed and 1 injured.—A beggar was killed and another injured by the explosion of a mixture of potassium chlorate and sulphide of Arsenic with which they were preparing crackers.

51. 17th October 1938. Ichapore. 2 injured.—While a boy was setting fire to a *Tubri* (Firework) it burst and injured him and another boy who was with him at the time.

52. 19th October 1938. Kurnool. No one injured.—When some boys were lighting Chinese crackers very near to a crackers shop, a burning cracker fell in the crackers which were kept for sale in the shop and the whole stock of crackers took fire.

53. 20th October 1938. Valaypatti. 1 injured.—After grinding sulphur, a woman was grinding chlorate of potash on the same stone when there was an explosion as a result of which she was injured. The accused was convicted and sentenced to pay a fine of Rs. 30 for an offence under Section 286 of the Indian Penal Code and a fine of Rs. 20 or in default to undergo rigorous imprisonment for 3 weeks for an offence under rules 32 and 138 of the Indian Explosives Rules, 1914.

54. 20th October 1938. Kattumanarkoll. No one injured.—While a display of fireworks was being shown in a crowded bazaar area, a spark from one of the fireworks fell on the stock kept there. This started a fire, which burnt down a number of thatched houses in the neighbourhood.

55. 22nd October 1938. Gauhati. 4 injured.—Four persons sustained injuries while discharging fireworks.

56. 22nd October 1938. Muthusseramadham. 1 killed.—While a woman was grinding a mixture of potassium chlorate and sulphur on a stone, the mixture exploded and injured her fatally.

57. 22nd October 1938. Madras. 1 killed.—A seven year old girl was lighting chinese crackers when her clothes caught fire. She was seriously burnt and died subsequently.

58. 22nd October 1938. Madras. 1 injured.—A girl sustained extensive burns from fire started by the explosion of some chinese crackers.

59. 22nd October 1938. Vannarpalayam. No one injured.—A lighted cracker set fire to a roof of a hut and six huts were completely burnt down.

60. 22nd October 1938. Karnool. 1 injured.—While burning crackers, the clothes of a child caught fire and his body was badly burnt.

61. 22nd October 1938. Nellore. 1 killed.—A child was lighting up flash matches when one of them accidentally set flame to her petticoat and caused severe burns. She died subsequently.

62. 23rd October 1938. Calcutta. One injured.—A beggar boy sustained injuries by the explosion of a firework probably containing a sensitive mixture which he was handling at the time.

63. 3rd November 1938. Bombay. Five injured.—An explosion resulting in the injuries to five persons occurred in a grocer's shop at Masjid Bunder Road, Bombay, which was licensed for the storage of 50 lbs. of fireworks. The explosion was probably due to the ignition of some of the crackers by the fusing of an overhead electric wire beneath which they were hanging and the crackers so ignited falling on a pile kept on the floor of the shop.

64. 23rd November 1938. Calcutta. One injured.—A person sustained injuries while setting fire to some fireworks.

65. 1st December 1938. Tiruchengode. 4 killed and 5 injured.—A serious explosion resulting in the death of 4 persons and injuries to 5 others occurred in an unlicensed shed illegally used for the manufacture of gunpowder and fireworks and where at the time of the occurrence 2 persons were actually engaged in the manufacture of gunpowder. The explosion was believed to be due to the dropping of an earthen pot containing gunpowder on to a gunny bag which contained a highly sensitive mixture. The licensee and his son were convicted and sentenced to pay a fine of Rs. 200 each for offences under rule 138, of the Indian Explosives Rules, 1914.

66. 3rd December 1938. Bombay. 1 killed and 1 injured.—An explosion resulting in the death of 1 person and injuries to another occurred in a licensed shop at Parbhadevi Road, Bombay, on the 3rd December 1938. The exact cause of the explosion could not be ascertained.

67. 20th December 1938. Lahore. 2 injured.—Some fireworks probably containing a sensitive mixture of potassium chlorate and arsenic sulphide exploded at platform No. 4 of the railway station, Lahore, causing injuries to 2 persons.

Petroleum.

68. 17th April 1938. Bombay. 3 killed.—A tin containing kerosene caught fire in the loft of a tea shop at Masjid Bunder Road, Bombay, on 17th April 1938, resulting in fatal injuries to 3 persons. The fire was believed to be due to the throwing of a lighted match near the open tin.

69. 26th May 1938. Sarai Alamgir. 1 killed.—Petrol stored in an unlicensed godown was ignited by a burning match causing fatal injury to the person concerned.

70. 21st June 1938. Dewan. 1 injured.—A fire broke out in the petrol godown of the Caebur Club Co. Ltd., at Dewan on the 21st June 1938, slightly burning the Manager. No damage was done to the godown but 44 full tins of petrol and a number of empty tins were destroyed. The cause of the fire could not be ascertained.

71. 27th September 1938. Bombay. 1 killed.—A boy died from the severe burning injuries which he sustained while pouring kerosene oil out of a tin on to a partially lighted coal sikhri. The tin exploded.

72. 19th October 1938. Bombay. 5 killed and 1 injured.—5 persons were burnt to death and one sustained injuries by the explosion of an oil container in a bucket factory situated in the compound of the Dholi Ghat at Sankli Street, Bombay, on the 19th October 1938. The explosion was believed to be due to the faulty construction of the container and the use of a misleading pressure gauge.

73. 23rd October 1938. Kurnool. Five injured.—The engine of a lorry was started when the driver was pouring petrol into the carburettor from a tin canister. The canister which was apparently leaky caught fire. The driver hastily threw away the tin canister and the burning petrol fell on 5 children who were standing by and they sustained severe burns.

74. 20th November 1938. Delhi. 1 killed and 1 injured.—A lorry after its daily run was standing in the godown of Messrs. Allen Berry & Co. Ltd., at Delhi when its petrol fuel tank caught fire. The godown chowkidar and his son in their attempt to put out the fire sustained injuries which proved fatal in the case of the son. The exact cause of the fire could not be ascertained but a short circuit in the electric wiring of the lorry was suspected.

75. 3rd December 1938. Madras. No one injured.—During the refuelling of a motor bus with petrol from a pump, the tank of the bus caught fire resulting in the complete destruction of the bus and damage to the top portion of the pump. Fortunately no one was injured. The cause of the fire was believed to be a spark produced by the 'overflowing' of some petrol from the bus tank on to the top of the battery which was in close proximity.

Chemicals.

76. 29th April 1938. Lakimawar. No one injured.—Smoke was seen issuing from wagon No. 1161 containing two acid jars. The wagon was immediately placed under the water column and the fire extinguished. On opening the wagon it was found that the jars had broken to pieces. The fire was considered to have been due to the acid which escaped from the jars coming into contact with some other substance contained in the medical stores loaded in the same wagon.

77. 7th May 1938. Timmancherla. No one injured.—Smoke was seen issuing from wagon No. C. G. 5442, containing Nitric Acid. On opening the wagon it was found that Nitric Acid had leaked out of a case on the floor of the wagon and was burning. The fire was put out with the aid of a fire extinguisher.

78. 17th May 1938. Lahore. No one injured.—A case containing sulphuric acid caught fire at the Lahore Railway Station. The fire was at once extinguished with the aid of the Railway Fire Brigade. The fire was due to spontaneous combustion caused by the action of the acid on the packing.

79. 1st October 1938. Kotri. One injured.—While the senior graduate Assistant of the Research Laboratory at Kotri was trying to open a cooled bottle containing strong Ammonia the twine fastening on the rubber stopper gave way and the stopper and a considerable amount of the Ammonia was blown out with great force injuring his face and eyes.

MISCELLANEOUS.

Matches.

1. 31st March 1938. Moradabad. No one injured.—Smoke was seen issuing from the roof of wagon No. 40774 containing safety matches packed in paper bundles. The wagon was immediately isolated and taken to the transhipment shed and on opening the wagon it was found that a part of the consignment of safety matches had caught fire. The fire was extinguished with the help of fire-extinguishers. The cause of the fire could not be ascertained.

2. 25th October 1938. Calcutta. One injured.—A fire broke out in one of the godowns belonging to the Esavi Match Company, wherein phosphorus and sulphide of antimony were stored. A cooly who was sweeping the floor of the godown at the time was slightly burnt. The fire was immediately brought under control by the Fire Brigade. The exact cause of the fire could not be ascertained.

Gas Cylinders.

6th May 1938. Bombay. One injured.—Ten cylinders filled with Carbon Dioxide Gas by the Dry Ice Corporation at Cadell Road, Malim were sent by cart for delivery to the Colonial Engineering Company at Princes Building on the 6th May 1938. While the cart was passing along DeLisle Road, one of the cylinders burst causing injuries to the driver. The cart was blown to pieces and the remaining cylinders were scattered on the way. The cause of the explosion could not be ascertained.

APPENDIX H.

(See paragraph 17 of the Report.)

Summary of accidents reported to the Department during the year 1938.

Explosives or dangerous and inflammable substances.	ACCIDENTS CAUSING LOSS OF LIFE AND BODILY INJURY.			Accidents not causing loss of life or bodily injury.	Total number of accidents.
	Number of accidents.	NUMBER OF PERSONS.			
		Killed.	Injured.		
<i>Explosives.</i>					
Gunpowder . .	14	13	10	3	17
Nitro-compounds .	1	2	1	...	1
Chlorate Mixture .	...	...	...	...	...
Fulminates . .	...	...	...	...	...
Ammunition . .	1	...	1	...	1
Fireworks . . .	44	44	76	5	49
Liquid Oxygen . .	...	...	...	...	...
TOTAL .	60	59	88	8	68
<i>Petroleum.</i>					
Petroleum generally .	7	11	8	1	8
TOTAL .	7	11	8	1	8
Chemicals . . .	1	...	1	3	4
TOTAL .	1	...	1	3	4
Miscellaneous . .	2	...	2	1	3
TOTAL .	2	...	2	1	3
GRAND TOTAL .	70	70	99	13	83

APPENDIX I.

(See paragraphs 17 and 23 of the Report.)

Detailed statement prepared from the reports made to the department showing the number of accidents and persons killed and injured during the ten years ending 1938.

Year.	GUNPOWDER.			DYNAMITE AND OTHER NITRO-COMPOUND BLASTING EXPLOSIVES.			CHLORATE MIXTURE.			FULMINATE.			AMMUNITION.			FIREWORKS.			LIQUID OXYGEN EXPLOSIVES.		
	Number of accidents.	Persons killed.	Persons injured.	Number of accidents.	Persons killed.	Persons injured.	Number of accidents.	Persons killed.	Persons injured.	Number of accidents.	Persons killed.	Persons injured.	Number of accidents.	Persons killed.	Persons injured.	Number of accidents.	Persons killed.	Persons injured.	Number of accidents.	Persons killed.	Persons injured.
1929 . . .	6	21	4	1	1	..	..	..	..	2	1	1	1	..	1	6	11	13	1	..	..
1930 . . .	4	7	1	2	1	6	..	..	..	4	..	7	3	1	8	30	43	36	..	..	..
1931 . . .	9	16	13	3	1	4	..	..	..	2	..	3	2	..	3	11	12	60	..	..	..
1932 . . .	2	3	1	..	..	..	..	..	..	5	4	15	2	..	2	13	22	17	..	..	..
1933 . . .	1	1	..	..	..	..	..	..	..	4	2	5	1	..	1	14	25	37	..	..	..
1934 . . .	10	12	21	..	..	..	..	..	..	..	..	..	..	..	..	23	26	39	..	..	..
1935 . . .	4	2	9	1	..	2	..	..	..	..	..	..	..	..	..	39	35	39	..	..	..
1936 . . .	10	15	8	1	1	3	..	..	..	..	..	..	..	..	..	31	23	56	..	..	..
1937 . . .	18	42	21	..	..	..	..	..	..	..	..	..	1	1	..	50	59	123	..	..	..
1938 . . .	17	13	10	1	2	1	..	..	..	..	..	..	1	..	1	49	44	76	..	..	..
TOTAL . . .	81	132	88	9	6	16	..	..	..	17	7	31	11	2	16	266	299	501	1	3	..
AVERAGE . . .	8	13	9	1	1	2	..	..	..	2	1	3	1	1	2	27	30	50	1	1	..

APPENDIX I—contd.

Detailed statement prepared from the reports made to the department showing the number of accidents and persons killed and injured during the ten years ending 1938—contd.

Year.	PETROLEUM.			CHEMICALS.			MISCELLANEOUS.		
	Number of accidents.	Persons killed.	Persons injured.	Number of accidents.	Persons killed.	Persons injured.	Number of accidents.	Persons killed.	Persons injured.
1929	16	26	28	...	...	...	4	1	5
1930	8	2	11	...	...	...	1	...	1
1931	10	19	6	...	...	...	1	...	1
1932	4	9	10	...	...	...	2	...	2
1933	4	8	1	...	...	...	1	1	1
1934	13	26	52	3	...	1	2	...	5
1935	14	11	7	4	2	2	4	...	12
1936	12	11	33	1	...	...	3	6	30
1937	4	1	6	2	...	2	2	3	3
1938		11	8	4	...	1	3	..	2
TOTAL	93	121	162	14	2	6	23	11	71
AVERAGE	9	12	16	1	1	1	2	1	7

APPENDIX J.

(See paragraphs 17 and 28 of the Report.)

Comparative statement prepared from Appendix I showing the number of accidents and persons killed and injured during the ten years ending 1939.

Year.	ACCIDENTS CAUSING LOSS OF LIFE OR BODILY INJURY.			Accidents not causing loss of life or bodily injury.	Total number of accidents.
	Number of accidents.	NUMBER OF PERSONS.			
		Killed.	Injured.		
1929	37	64	52	4	41
1930	52	53	70	...	52
1931	37	48	90	1	38
1932	28	33	47	...	29
1933	23	37	45	...	25
1934	42	64	119	9	51
1935	60	30	71	16	66
1936	60	56	130	8	68
1937	70	106	159	7	77
1938	70	70	99	13	83
TOTAL	471	586	891	58	529
AVERAGE	47	59	89	6	53

APPENDIX K.

(See paragraph 33 of the Report.)

PETROLEUM RULES, 1937.

1. In its Notification No. M-826, dated the 23rd May 1938 the Central Government amended its notification in the late Department of Industries and Labour No. M-826, dated the 16th June 1937, by the addition of the words and figures 'other than petroleum which has its flashing point not below 200°F.' after the words 'storage or transport of petroleum' in the said notification.

2. In its Notification No. M-826 (1), dated the 13th June 1938, the Central Government in exercise of the powers conferred by Section 31 of the Petroleum Act, 1934 (XXX of 1934) amended its notification in the late Department of Industries and Labour No. M-826, dated the 16th June 1937, by the insertion of the words, figures and letter 'other than petroleum which has its flashing point not below 200°F.' after the words 'transport or storage of petroleum' in the said notification.

3. In its Notification No. M-826 (2), dated the 13th June 1938, the Central Government in exercise of the powers conferred by Section 31 of the Petroleum Act, 1934 (XXX of 1934) as extended to Berar by the Petroleum (Berar Extension) Act, 1937 (XXIII of 1937) amended its notification in the Department of Labour No. M-826 (4), dated the 17th November 1937 by the insertion of the words, figures and letter 'other than petroleum which has its flashing point not below 200°F.' after the words 'storage or transport of petroleum' in the said notification.

4. In its Notification No. M-826, dated the 23rd June 1938 the Central Government amended rule 14 of the Petroleum Rules, 1937, by re-numbering sub-rule (3) of the rule as sub-rule (4) and before that sub-rule as so re-numbered by the insertion of a new sub-rule as sub-rule (3) which authorizes the Collector of Customs to waive the requirements of rules 5 and 13, if he is satisfied that any petroleum imported otherwise than in bulk is not intended to be stored in British India but is intended to be despatched immediately after landing to a territory which is not part of British India, and to permit, by written order, such petroleum to be landed for the purpose of immediate despatch to the territory in question subject to such conditions as he may specify.

In the same Notification it also amended sub-rules (1) and (2) of rule 20 of the said Rules by the insertion of the words 'in British India' after the words 'any one'.

5. In its Notification No. M-826, dated the 3rd August 1938, the Central Government was pleased to exempt Coal tar and any of its products having a flashing point not below 160°F. from all the provisions of Chapter I of the Petroleum Act, 1934 (XXX of 1934).

6. In its Notification No. 105, dated the 6th August 1938 under the Sea Customs Act, 1878 (VIII of 1878) the Central Government was pleased to prohibit the bringing into British India of dangerous petroleum as defined in the Petroleum Act, 1934 (XXX of 1934) save in accordance with the provisions of that Act and of the rules and orders for the time being in force thereunder.

7. In its Notification No. M-826 (1), dated the 22nd December 1938 the Central Government amended rule 30 of Petroleum Rules, 1937 by re-numbering it as sub-rule (1) of that rule and by the substitution of the words 'licensed annually for' for the words 'certified annually as suitable for' in that sub-rule and also by the insertion of a new sub-rule after sub-rule (1) as re-numbered which lays down that the licence referred to in sub-rule (1) shall be granted in such form and on payment of such fees as may be specified by the Central Government in this behalf and the licence shall remain in force for a period of 12 months.

8. In its Notification No. M-826 (2), dated the 22nd December 1938, the Central Government in pursuance of sub-rule (2) of rule 30 of the Petroleum Rules, 1937, prescribed the form appended therein for the grant of licences under that rule in respect of ships or other vessels for the carriage of petroleum in bulk by water and directed that fees on the scale laid down in the Notification should be payable for such licences.

9. In its Notification No. M-826 (3), dated the 22nd December 1938, the Central Government amended the late Department of Industries and Labour Notification No. M-826 (2), dated the 31st March 1937 by the substitution of the word "licence" for the word "certify" and the omission of the words "as suitable" from the latter notification.

10. In its Notification No. M-1261, dated the 12th January 1939, the Central Government amended rule 22 of the Petroleum Rules, 1937, by re-numbering it as sub-rule (1) of that rule and by the substitution of the words "Collector of Land Customs" for the words "Customs Authority" in the rule and also by the insertion of a new sub-rule after sub-rule (1) which authorizes the Collector of Land Customs to waive the requirement of rule 5 subject to such conditions as he may specify if he is satisfied that any dangerous petroleum imported at a land customs station on the Viramgam Custom line under sub-rule (1) is not intended to be stored in British India but is intended to be despatched immediately to Baroda State territory.

Carbide of Calcium Rules, 1937.

In its Notification No. M-826, dated the 15th September 1938, the Central Government amended the Carbide of Calcium Rules, 1937 by the addition of sub-rule (3) to rule 21 thereof exempting His Majesty's Forces from taking out licences for the possession of any Carbide.

Indian Explosives Rules, 1914.

Owing to the introduction of the Government of India Act, 1935 and with a view to transferring the power of granting licences under the Indian Explosives Rules, from the Provincial Governments to Central Government, the Government of India, in their Notification No. M-862, dated the 1st April 1938 amended the rules authorising the Chief Inspector of Explosives to grant licences (1) in form I, for the import by sea of all authorised explosives, other than gunpowder, ammunition (Division I) and fireworks or any explosives re-imported under clause (ii) of the proviso to rule 12, (2) in form J, (3) in form K and (4) to issue permits under rule 68 and making certain minor alterations to the Rules in connection therewith.

